

Original Research Article

An Exploration of the Pre-Islamic Spatial Organization Evolution within the Historic City of Shushtar*

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Abstract | Until the Qajar Era, the historic city of Shushtar served as the administrative center of the Khuzestan plain. Water and the location of the river relative to the city influenced the city and the establishment of its core. This research employs a historical-interpretive method to investigate the historical impact of the natural elements of water and river, human-made urban elements, as well as agriculture and other water-related human activities concerning the spatial organization of this city. The research aims to explore these factors in several layers during the pre-Islamic era to represent the inner order and spatial organization of the city. The spatial organization of historic Shushtar was studied and interpreted by examining this historical era through studying historical documents, records, and evidence, as well as searching for events, occurrences, and conditions that influenced the emergence of this city in the pre-Islamic era. The interviews with experts were then utilized to verify the field observations and perceptions. This article concludes that water has played a significant role in forming the spatial organization of the city as an influential element in the prosperity of the region. The findings contradict previous archaeological findings, historical documents, and texts. Therefore, this study seeks to provide a more accurate picture of the city's spatial organization during the pre-Islamic era by identifying stated contradictions. The research findings ultimately reveal that the natural elements of water and the Karun River were the main factors for settlement in the region. The initial point of the spatial organization formation of this city was the Shushtar city core, located at a strategic point compatible with the natural landscape and water elements. The religious values, economy, politics, needs, and life activities developed under the influence of said natural environment.

Keywords | *Shushtar, Historic City, Sassanids, Spatial Organization, Evolutionary Process.*

Introduction | Similar to other cities located in the Khuzestan Plain, the historic city of Shushtar has taken a distinctive form and organization due to its favorable natural conditions and location between the mountains and the plain. Historical texts and books indicate that this city was the center of Khuzestan province from its formation until the Qajar era. Shushtar lost its position following historical events and was gradually forgotten as a footnote in history. The city was transformed

during certain historical periods, such as the Sassanid Era, during which it became an industrial center in the Khuzestan plain. The city, water installations, and water-related elements developed together during this era, forming an island-like city (Rawlinson, 1983, 89-97). The river and the city's location were two influential factors in defending the city during the Arab Muslim invasion and the establishment of its boundaries (Curzon, 1994, 382-448). Factors such as the existence of the city of Dastva, attention to the river, construction of dam

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bridges, water installations, the transformation of Shushtar into a water management center for downstream plains, as well as the construction of the city's governmental citadel, employing Roman prisoners in urban development, textile production, along with political and social changes during the Sassanid Era, have all influenced the spatial organization of the city. These factors, along with urban order, the role of urban components and elements, and the relationships between them, constitute the spatial organization of the city.

The spatial organization of the city represents the order among the elements that define the city as a system (Mansouri, 2007, 51). If we consider the spatial organization of the city in the pre-Islamic era as composed of separate regions, taking into account the importance of residents and administrators in its location (ibid, 53), and identify all factors influencing spatial organization such as human-made elements, natural environment, activities, human movement systems, and all urban living forces - with time serving as an intermediary bridge between them (Habib, 2006, 8) - we must determine whether the historic city of Shushtar follows this principle.

The primary research question examines the evolution of the spatial organization of the historic city of Shushtar during the pre-Islamic era, as well as the integration of elements and urban components. These components have found their role in the logical process of urban development, providing a systematic framework for the city, far from chaos and disorder. The following factors were investigated within this study: Water and river as natural elements, urban factors as human-made elements, agriculture and water-related activities as human activities, and history as the temporal dimension.

Research Question

This research aims to answer the following question: What characteristics did the spatial organization of Shushtar city have in the pre-Islamic era, and how did factors such as natural elements, human-made elements, human activities, and time impact said spatial organization?

Research Method

The research employs a historical-interpretive method, providing a historical narrative through historical documents, records, and evidence to examine events, incidents, and conditions that influenced the spatial organization in the pre-Islamic era. The initial stage of this study included defining research boundaries, followed by collecting data from documents and record sources. As data collection was carried out through text analysis and examination of primary sources and documents, initial analysis and alignment of the prepared documents were prioritized. By analyzing changes and developments in values and historical events, as well as conducting interviews with experts in archaeology, history, and architecture, several ambiguities regarding the physical

structure of the city were resolved, and a rough depiction of the spatial organization of the city of Shushtar during the Sassanid era was obtained. This depiction has been documented, evaluated, and validated.

Literature Review

The previous related studies can be categorized into two groups. The first group includes sources that examine the spatial organization of the city. Nattaq and Hosseinzadeh (2023) investigated the evolution of Mashhad's spatial organization. Abarghuyi and Mansouri (2021), in the article "Reviewing the Comprising Elements of Spatial Organization in Post-Islamic Iranian City," interpret travel accounts from the 15th to 20th centuries as indicators of organizational structure and specific interconnected elements forming a unique urban uniformity. Mansouri (2020), in his book "The Spatial Organization of Iranian Cities in the Islamic Era," explores various views and theories regarding cities and defines the concept of spatial organization. He presents the spatial organization of Iranian cities, such as Qazvin, Tabriz, Bushehr, Gorgan, and Yazd, based on four fundamental elements: the center, small clusters, structure, and territory (Latifi et al., 2017). comparatively analyzed the spatial organization elements of Iranian cities during the Safavid and Qajar Eras in their article. Mansouri and Dizani (2016), in their book "Spatial Organization of Qazvin," analyzed historical era changes, focusing on center, structure, neighborhoods, and territory. Zekavat (2011) examines the difference between city organization and structure in the article "The Role of Spatial Organization in Urban Design." In his article "The Spatial Organization in the Iranian City: Pre and Post-Islam," Mansouri (2007) investigated the spatial organization of Kerman and its transformations.

The second group comprises books and sources describing historical and geographical developments, introducing mosques, shrines, and water structures in Shushtar. These include books such as "History of Shushtar" (Sharafeddin, 2023), "The Geographical History of Khuzestan" (Pourkazem, 2004), "Khuzestan and Its Ancient Civilization" (Afsharistani, 1994), "Land of Rulers" (Eghtedari, 1974).

Archaeological reports and notes regarding excavations in Shushtar have been composed by Moghaddam, Rahbar, Alizadeh, and Derakhshi. Moghaddam (2012) in a book titled "Settlement Development in the Karun River Basin, Upper Khuzestan Plain" examines the river settlements of Karun and Khuzestan Plain, stating: "Unlike the Elamites who were located further east and at a greater distance from the Karun River, Achaemenid settlements expanded westward into the Karun floodplain. During the Parthian Era, the extent and number of settlements in the northern part of the Miyanab Plain increased, concentrating more around the Karun floodplain and Dariun Canal." (Siyahpush et al., 2020) examined the formation and transformation of Shushtar's physical-

spatial structure during the Sassanid era in an article and noted that the city suburb was more prominent compared to the inner city. Additionally, the Grand Mosque was constructed outside the city's initial core in a location without sufficient urban development potential. The bazaar formed along the route from the mosque to the Shadorvan gate. Lotfi (2014) in a thesis titled "The Role of Water Supply in the Formation of Physical Structure in Shushtar", and Afsharbagheri (2009) in a thesis titled "Return to Self: Proposing a Housing Pattern in Shushtar's Historical Fabric - A Case Study of the Abdullah Banu neighborhood" examine the ancient fabric of this city. Among the reviewed articles and books, the greatest attention is focused on works registered in the UNESCO World Heritage List. Although the researched studies have been conducted in various fields, such as historical geography, historical document review, and archaeological reports, and are diverse in their subjects, they have failed to address the city itself and the evolution of Shushtar's spatial organization during the pre-Islamic era. The distinguishing feature of this study is its examination of the evolution of Shushtar's spatial organization during the pre-Islamic era, relying on library sources and historical texts, investigating the role of urban elements and components in relation to each other, an aspect not previously explored in other sources.

• The concept of spatial organization

The city is a captured space where human life elements, both material and spiritual, are established. The city did not initially exist; however, gradually and following the definition of human living needs, interacting elements emerge in the environment, creating a territory related to the human mind and activity, which is called a city (Mansouri, 2007, 50). This definition of the city presents its existence as a system. Accordingly, the city is a unified whole with a mechanism of components and elements, in other words, an internal order called spatial organization (Zekavat, 2011, 53). The smallest components of this system can be considered human-made components, such as buildings, masses, volumes, urban spaces, road networks, squares, and urban installations in an intertwined totality. The natural environment, with key elements such as the natural terrain, land and its undulations, water flows, and vegetation, plays a role in the composition of elements in the city form. Human activities and individual purposes impact the relationship among the constituent components, and time, which reflects behavior, is also significant (Rapoport, 2013, 201-208). Elements must be introduced as spatial organization indicators, with their relationships in the city examined, to identify the governing order of the components in this system. Territory, core, structure, and small wholes are considered distinctive elements of urban spatial organization, the recognition of which goes beyond morphological characteristics (Mansouri, 2007, 51). According to the definitions and framework established for this research, urban spatial organization components will be

examined based on four characteristics: Water and river as natural elements, urban factors as human-made elements, agriculture and water-related activities as human activities, and history as the temporal dimension.

• Historic Development of Shushtar City During the Pre-Islamic Era

In the report titled "Archaeological Educational Excavations in Dastva, Shushtar," Rahbar attributes the foundation of Shushtar to the Elamites (Rahbar, 2004, 7-8). The discovery of artifacts such as pottery workshops and coffins in various regions of Shushtar like Fedelak, Gelalak, Darkhazine, Rostam Kovaz or Rost Qobad, Gotvand, and Aghili in archaeological excavations led by Moghaddam (2005) and Rahbar (1997) indicates the special status of this region in ancient times. Unlike the Elamites, who were located further east along the Karun River, the Achaemenids settled towards the west in the Karun River floodplain (Moghaddam, 2012, 53). During the Achaemenid Era, the construction of dams, weirs, or bridge dams in Fars, Khuzestan, and Mesopotamia, particularly for irrigation purposes, was highly widespread (Farshad, 1983, 244). Darius, I dug the Dareyan¹ canal to irrigate an area in Khuzestan in a region known as "Shushtar Miyan-ab²," which encompasses approximately fifty thousand hectares of land (Iranshahr, 1963, 1560). Although historical texts attribute Dariun to the Achaemenids, in conversation with Moghaddam (2023), who conducted excavations in the Shushtar region, the evidence obtained is attributed to the Sassanids. "Field excavations and studies show that the Dariun Canals³ were constructed during the reign of Shapur I in the Sassanid Era simultaneously with the Shadorvan bridge-dam, Mizan dam, and other significant irrigation structures such as mills and waterfalls" (Abbas, Moghaddam, Personal Communication, February 13, 2023).

During the Parthian Era, the number and extent of settlements in the northern part of the Miyan-ab plain increased, concentrating more around the Karun River floodplain and the Dariun canal, with a large city called "Dastva" emerging in this area (Moghaddam, 2012, 53). In early Islamic texts, such as books of Ibn Khordadbeh or Qudamah ibn Ja'far, this city is not mentioned, and it appears that Dastva was destroyed at some point in history. According to Imam Shushteri, this destruction might have occurred during the early Islamic wars or the Kharijite rebellions, whose center was primarily in Khuzestan during the Umayyad Era (Imam Shushteri, 1952, 25). The destruction could have been the result of the city's location in a flood-prone area (Moghaddam, 2012, 52). In any case, the city gradually lost its significance, and following the early Islamic period wars, its inhabitants migrated to Shushtar and sought refuge within the city walls. The existence of a neighborhood called Dastva in Shushtar is evidence of this claim.

During the Sassanid Era, the number of settlements along the Karun River decreased due to flood activities, and new settlements and cities emerged near the Gargar

Canal (*ibid.* 52). In this Era, cities were construed by royal decree under the name “Shahi City” or were the result of significant events like victories in major wars. Cities were founded in strategically important regions and expanded over time (Karimian, 2006, 540). Given its location, which was surrounded by the Karun River, Gargar Canal, Dariun Canal, and Raghat Canal⁴, and considering its role as a center for water management and related facilities, Shushtar falls into the third category. City locations were selected with at least one side supported by a mountain, river, or natural resources, making access difficult (Pazoki, 1999, 304-307), a principle that Shushtar followed by forming alongside the river. With the city’s development during the Sassanid era, many bridges, dams, canals, and water supply networks were established (Moghaddam, 2012, 37). Following the construction of the Dariun Canal, the Karun River was divided into two branches north of Shushtar: the eastern branch is the Gargar Canal, and the western branch is Mahparian (known as Shoteit from the 10th century AD). These two branches reconnect at Band-e Qir, effectively turning Shushtar and the lands between the two rivers into an island (Enayatollah et al., 1971, 191). Abu Dulaf (288 AH/900 AD), in a book researched by Vladimir Minorsky, refers to the Karun River splitting into two branches west and east of Shushtar, named “Masruqan” and “Tustar”, describing them as the “Great River” (Wadi Azim)⁵ (Minorsky, 1975, 89) (Fig. 2). The excavation of canals, waterways, and water channels in Shushtar was aimed at irrigating downstream plains.

According to Yaqubi(891), Balazari(892), and Abu Dulaf (900), the Shadorvan bridge- the dam was constructed by Shapur to raise water levels and control the city’s lands. The “Kohandezh” (Salasel Castle) was also formed near the river and close to the Shadorvan bridge, to provide city security and control the water supply network⁶ (Balazari, 1967). During the Muslim Arab invasion of Shushtar and Hormozan’s resistance, Balazari notes: “When Hormozan saw this situation, he fled to his fortress”⁷ (Balazari, 1967, 247). Additionally, “The Tracking and Excavation Report in Kohandezh” by Rahbar states that artifacts such as fragments of Sassanid pottery and vessels were found in Kohandezh, indicating the castle’s existence during the Sassanid Era (Rahbar, 2008).

Sassanid kings utilized the technical skills and expertise of war prisoners in urban construction, bridge, dam, and road building⁸. Mir Abdol-Latif Shushteri(1708 -1758) mentions: “As Shapur had an interest in developing and prospering Shushtar, he compelled Caesar to first build the Shadorvan of Shushtar in such a way that the surrounding areas could be cultivated” (Shushteri, 1984, 46). As a result, the Sassanids strengthened trade and agriculture by settling Romans in cities and increasing human activities, thereby

promoting the growth of social, economic, and political relationships.

• Spatial organization components of Shushtar during the Sassanid era

As previously stated, spatial organization is the order between the roles of elements that introduce the city as a system. It is necessary to constantly monitor the relationships among spatial organization elements in the city to maintain this order. Territory, core or centrality, structure, and small wholes constitute the distinctive elements of the spatial organization within a city (Mansouri, 2007, 51). Consequently, this section examines the initial core of Shushtar and the city structure while focusing on the neighborhood as a small “whole” and the city wall as a defining boundary of its territory.

- Core or centrality

From a morphological perspective, old sections, and commercial areas typically have a denser access network in cities with an organic structure such as Shushtar. In other words, older areas have smaller blocks with smaller dimensions, while in newer suburbs, urban block sizes become larger (Ahmadi Siahpush et al, 2020, 141-142). In the raw axial model of Shushtar, a crescent-shaped area in the east, along the Gargar Canal, approximately covering the Abdullah Banu and Maqam Abbas neighborhoods, has higher density compared to other city sections. Considering the urban fabric, particularly in old maps and aerial photographs, these two areas constitute the ancient section of the city (Masoudinejad, 2016, 90) (Fig. 1).Moghaddam notes: “Unfortunately, the expansion of Shushtar, particularly in the last one or two centuries, has led to the destruction of the main core of the Sassanid Shushtar. The last person who visited a large Sassanid-era site within Shushtar city was Henry Wright, the famous American archaeologist. In 1969, he recorded a large hill near Shushtar Cinema⁹. Sadly, urban development has left nothing of this hill in the present day today” (A. Moghaddam, Personal Communication, February 13, 2023). Chaharmahali adds on this topic: “Although new constructions have been made opposite the cinema, some Shavadans¹⁰ have been preserved. The presence of Shavadans, along with examination of the soil layer to a depth of nearly three meters, hit the main ground layers instead of human-made structures. Consequently, this is a rocky area. Additionally, street construction images from 1951 show rock excavation in this section”(A.M. Chaharmahali, Personal Communication, February 13, 2023).

By reviewing past hypotheses such as the Sassanid city plans proposed by Rahimiyeh and Robubi (Rahimiyeh & Robubi, 1974, 35) or the Persian Design and Construction Consulting Company (Persian Design and Construction Consulting Company, 2009, 27), which have predicted the Sassanid city limits around the current 17 Shahrivar Square (Fig. 2), it can be stipulated that a city with characteristics Shushtar - with water structures and



Fig. 1. Proposed Area of the City's Initial. Source: Ahmadi Siahpoush, 2020; Masoudi Nejad, 2017.

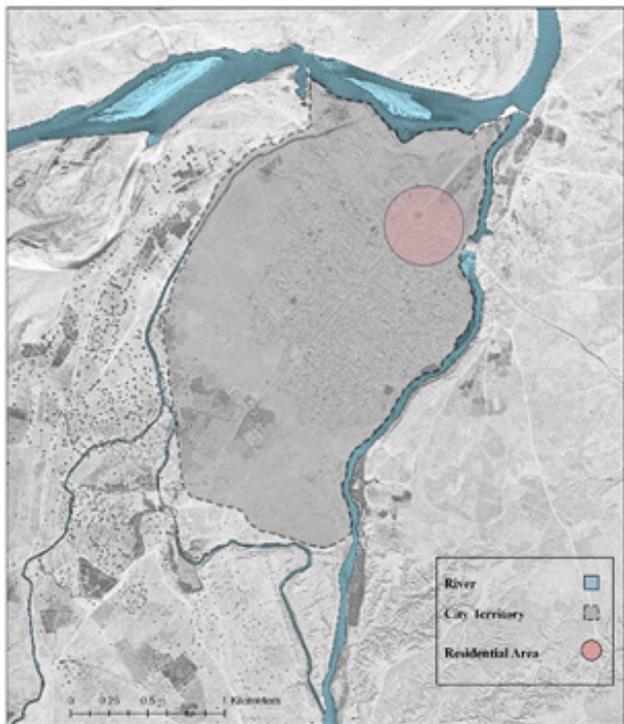


Fig. 2. Proposed Area of the City's Initial Core. Source: Rahimiyyeh & Robubi, 1974; Persin Design and Construction Consultations Company, 2009.

facilities, surrounded by a massive moat-like river, and extensive settlement in the Mian-ab plain - was not limited to a small section around the main square of the current city but extended along the Gargar Canal to the Raghat canal area (Abbas, Moghaddam, Personal Communication, February 13, 2023). Accordingly, Salasel Castle (Kohandezh) and sections of the Abdullah Banu, Maqam Abbas, Sadat, and Dokan Shams neighborhoods formed the initial core of the city. The city was divided into two sections: "Governmental Citadel"¹¹ and "Residential Area," with separate defensive walls separating the governmental citadel from the residential section (Fig. 3).

- Neighborhood

In books such as "Tale of Shushtar," "Ferdows in Shushtar History," and "Land of Rulers," the Sabian¹² residential area, with a population exceeding ten thousand residents, is mentioned (Sharafuddin, 2023, 28). The Sabians had a specific neighborhood along the river, believed to be the area near the Borj-e Ayar bridge-dam. Additionally, the limit of the city extension could have been located in an area close to the Borj-e Ayar¹³ bridge-dam. However, due to differences in religious values, a gap emerged between the two "residential" sections of the city.

A characteristic of Sassanid cities was the use of Roman war prisoners and Syrian urban dwellers in urban development (Khalatbari & Partoe Moghaddam, 2010, 58). In the book "History of Shushtar," Sharafuddin mentions a forgotten neighborhood called Dibabafan, placing it near Dariun (Sharafuddin, 2023, 21). Considering the layout of Sasanian cities, it's not far-fetched that the Dibafan neighborhood, where war prisoners¹⁴ were engaged in craftsmanship¹⁵, was somewhat distanced from other city neighborhoods located near the main city gate. In historic Shushtar, neighborhoods were semi-independent units that functioned like interconnected components, interacting through the city structure and core. These small wholes consisted of The residential section along the Gargar Canal and mill complex connected to daily resident activities (Gargar neighborhood), the industrial section near the city entrance (Shadorvan gate), and the Sabian residential section with different religious values from other city sections (Fig. 3).

- City wall

Based on the descriptions, the city boundaries begin in the north at the Shadorvan bridge-dam as the main city gate, extending along the Karun River (Mahparian branch) with the establishment of the governmental citadel. The residential section, set apart from the governmental citadel, forms along the Gargar Canal towards the south, extending to the Borj-e Ayar bridge-dam. The defensive system of the citadel was erected by utilizing the Karun River on one side and the moat around the defensive wall on the other. The presence of the Karun River in the north, the Gargar Canal in the east, the Dariun Canal in the west, and the Raghat Canal in the south surrounded the city like an island,

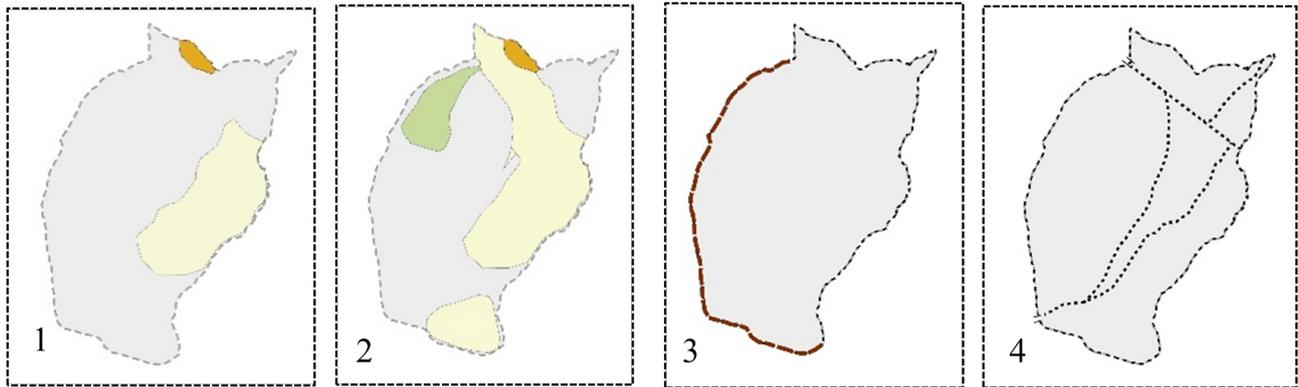


Fig. 3. 1. Governmental and residential core 2. Neighborhoods (including Dibabafan and Sabian neighborhoods) 3. City boundaries with natural walls in the north, south, and east, and the defensive wall with the Dariun canal (west) and 4. Access routes. Source: Authors.

completing its defensive wall (located on the western side). Accordingly, the city wall can be divided into two sections: The Natural Wall (rivers and canals) and the Artificial wall (defensive wall). The territory of the city was located between these natural and artificial walls and remained unchanged until the Qajar Era (Fig. 3).

- Structure

Although the Sassanid Era saw the construction of the Shadorvan bridge- dam, Lashkar bridge- dam, and Gargar bridges, the Shadorvan bridge-dam held significantly more importance for passage and city entry. Ibn Battuta (1352) noted in his travelogue: “Tostar (Shushtar) has but one entrance/exit for the travelers, and they call it the “Desboul” (Dezful) gate” (Ibn Battuta, 1997, 237). Ibn Battuta referred to this gate as “Despoul” in the 14th century, suggesting it likely had a different name in pre-Islamic times. Given its location at the beginning of the Shadorvan bridge-dam, the gate shall be referred to by the same name. Examining the oldest existing aerial photograph of the city (1956) reveals the internal access route begins from Shadorvan, passing through Kohandezh eastward, before extending to the Gargar Canal and following an approximately north-south path in the residential section (Fig. 3).

- Discussion

The strategic location of Shushtar on the Karun River, between northern and southern Khuzestan, made it an important city in the Khuzestan Plain. Archaeological studies have shown that the region and the Karun River were settled before the development of Shushtar. Settlement moved from the unruly Karun riverbank to the Gargar shoreline with the excavation of the Dariun canals, Gargar canal, and Raghat canal. The land composition and soil type of the area were not insignificant alongside water and the river as the primary natural element and location factor for Shushtar. Several settlements were concentrated around the Karun floodplain during the Achaemenid and Parthian eras. Yet, in the Sassanid period, human activities

in Shushtar and the intermediate plains were designed to encourage regional inhabitant settlement by exploiting the river and maximizing water use. They created artificial elements through the natural water element and human activities, which not only defined the spatial organization of Shushtar but also affected the downstream plains. The southern Khuzestan plains were irrigated and revitalized by branching the Karun River into two sections, “Mahparian” and “Gargar”, and constructing the Dariun canals, excavating water canals and their derivative canals, water-related structures, bridges, and dams.

A citadel was constructed beside the Mahparian branch to oversee and manage water resources, which formed the governmental section of the city. Shadorvan Bridge was built as an access route into the city interior over the Shoteit (Mahparian) branch, with the Shadorvan Gate emerging at that point. From beside the Shadorvan Gate, facing south, the city’s artificial wall was constructed. The city was bounded from the west and south by an artificial wall consisting of the Dariun and Raghat canals serving as its moat and from the east by a natural barrier (Gargar canal), thus defining the city’s territory. On the southern wall’s side, the Lashkar dam and Lashkar (Askar) Gate were built. The city gates’ locations were subject to the city’s natural terrain and river, and the city’s structure traversed the residential area and governmental citadel, extending towards the edges of its territory.

People chose the Gargar shoreline for settlement instead of the Mahparian shoreline, and expanded their residence from the western side of Gargar, alongside the mill complex (which was part of the city’s economic activity) to the southeastern area, with the residential section positioned at a distance from the governmental fortress. Another settlement area belonged to the Sabians, located at a distance from the city’s residential section, near the Borj-e Ayar dam and around the Raghat canal. The city marketplace formed along the route leading to the Shadorvan bridge- dam and

one of the main pathways. The Sassanids provided the opportunity to develop a large city with an economy based on water and industries such as silk weaving (Fig. 4).

Conclusion

An examination of the spatial organization of the historic city of Shushtar in the pre-Islamic era reveals that the primary factor for settlement in the region was the natural element of water and the Karun River. The extensive settlements along the river in various parts of the Khuzestan plain during the Achaemenid and Parthian periods indicate the importance of this region in terms of water access and agricultural development. Additionally, the existence of the city of Dastva during the Parthian period and its subsequent disappearance led to the positioning of Shushtar in a higher and more dominant point overseeing the river during the Sassanid era. The vast downstream plains of the Karun River and the need for their agricultural irrigation prompted the Sassanids to create multiple water canals and use water management structures to control and purposefully transfer water. The morphological changes in Shushtar were influenced by the river and water, which helped preserve the territory of the Sassanid city while adding urban elements and components following the entry of Islam into Iran. The strategic location of Shushtar’s urban core, compatible

with the natural environment and the water element, was the initial point of the spatial organization of the city. The “governmental citadel” was established to control the irrigation system and create security in the regions surrounding the Mahparian (Shotiet) River, while the “residential section” was located near the Gargar Canal to protect against flood damage and facilitate activities and livelihood. The separation of the “governmental citadel” and the “residential section” was the result of living needs and human activities prevailing over urban governance. Moreover, differences in religious beliefs and values created a rift between the two residential sections of the city and the Sabian neighborhood. Although located within the city territory, this caused the separation of the Sabian neighborhood from the city body. The settlement of Roman prisoners in another section of the city territory to employ them for economic prosperity indicates a differentiation in residence and capital systems, with its impacts visible in the location and settlement pattern of neighborhoods. Ultimately, religious values, economy, politics, needs, and living activities developed under the influence of the natural environment, and the spatial organization of the historic city of Shushtar during the Sassanid era, formed the basis and framework for the spatial organization of Shushtar in subsequent centuries and the Islamic era (Fig. 5).

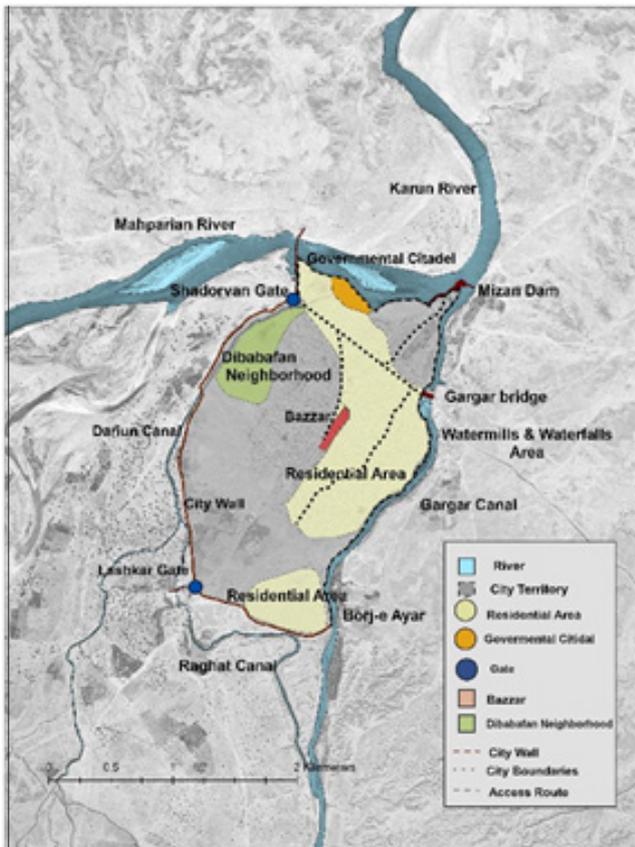


Fig. 4. Spatial Organization of Shushtar during the Sassanid Era based on Historical and Archaeological Studies. Source: Authors.



Fig. 5. Spatial Organization of Shushtar in the Sassanid Era. Source: Authors.

Endnotes

* This article is extracted from “Arezou Afsharbagheri’s” doctoral dissertation entitled “The role of the transition of water on natural, cultural, and architectural structure of the historic city of Shushtar” under the supervision of Dr. “Ali Omranipour” and advisement of Dr. “Mohsen Vafamehr” at the Islamic Azad University, Ahvaz, Iran.

1. This is the same as Dariun. Some books have been written using this title. In this section, the term “Dareyan” is used to follow the original text of the book.

2. In the past, Karun in the north of Shushtar branched into two streams, with the western branch called Shoteit and the eastern branch called Gargar, which reunite 25 miles south of Shushtar and flow towards Ahvaz. As a result of this separation and reunion, an irregularly shaped island like a willow leaf is formed, currently known as “Minu” and referred to as “Miyān-ab” (between waters) in historical writings. Since the word “Minu” in Persian means garden or paradise, its use here is appropriate (Imam Shushteri, 1952, 123).

3. Considering the branches and water intake headings of the Dariun canal, Moghaddam believes the term “Anhar”, meaning rivers, is more accurate.

4. The Raghat canal, branching from the Dariun canal, flows through the southern part of Shushtar and extends to the Gargar Canal, completing the city’s water barrier. Niroomand mentions in his book about Shushtar: “Raghat is probably the Arabic ‘Raḡah’, meaning land that is flooded and drains to another place.” (Niroomand, 2005, 6).

5. The first is the undivided “Dijil” (Karun) river, with a large bridge built over it and a beautiful, extensive mosque constructed beside it. This river is a continuation of the main river, with water wheels and remarkable mills along its banks. According to Abu Dulaf, the river’s water turns red when rising and initially flows to Basian and then to the sea. Another branch called “Masroqun” diverges from this river, passing only through Askar Mokram (a location east of the current Qir Dam). This suggests, contrary to the current situation, the two rivers did not converge near the Qir Dam but flowed independently. He also notes the strong and beautiful Shadorvan Bridge over the Wadi al-Azim River, artistically constructed to collect and distribute water into multiple rivers. He states: “Opposite this dam is the mosque of Ali ibn Musa al-Reza. When he was en route from Medina to Khorasan, he passed through and sketched it. Khuzestan has many historical remnants from the Sassanid era.” (Minorsky, 1975, 89).

6. The Dariun canal is supplied by eight water intakes located in the Shoteit body and underneath the castle. After passing under the castle, these water intakes become visible as an open canal. Water intakes can be seen in the area of the Sistray Castle (Report of the Historical Water Structures Base of Shushtar, 2011).

7. Hormozan took refuge in Shushtar, which was the main and central city of the kingdom and had a strong fortification. Hormozan settled in a castle near the Shadorvan Bridge, which appeared impenetrable. (Balazari, 1967, 339) Hormozan’s settlement in the fortress indicates the existence of this castle in Shushtar before the Arab Muslim invasion.

8. Shapur I forced the captured Roman Emperor Valerian and other prisoners to build a dam on the Karun River near Shushtar. (Khalatbari & Partoe Moghaddam, 2010).

9. Shushtar’s cinema is located in the 17 Shahrivar Square area.

10. Shavadan is an underground space in a house used by residents to cool down during Shushtar’s heat. The etymology of the word “Shavadan” comes from “Shavoneh” in Shushtar literature, meaning water that becomes cool due to a gentle breeze (Robubi & Rahimiye, 1974, 82).

Naima in the book “Dezful, the City of Brick” mentions: “Linguistically, ‘sho’ means dark, black, and sloping. ‘Dan’ is a suffix that can be understood as ‘make it dark’” (Naima, 1989, 28).

11. The Salasel Castle is a very large fortress with extensive and multiple courtyards, barracks, stables, bathhouses, prayer halls, towers, gardens, ammunition stores, drum houses, harems, kitchens, multiple gates, large pools, walls, and moats, which are now mostly in ruins and buildings have collapsed. (Imam Shushteri, 1952, 127; Mir Fattah, 1976, 77-79).

12. This community is a present secretive religious group that does not easily reveal their beliefs or speak simply about their rituals. (Drower, 1937, cited by Hezbaizadeh, 2011, 31) The Holy Quran considers Sabians as “People of the Book,” and according to religious narration, their religious tradition dates back to the time of Adam; they are followers of John the Baptist (Mohaddethi Ghilvaei & Samandizadeh Shushteri, 2020, 104). Archaeological excavations in 2004 by Masoud Azarnoush discovered a small inscribed pottery shard from Hegmataneh, whose historical period - found in Iran and Arabia - is based on the inscription, derived from Elamite script from the Parthian era (Bashshash Kanzaq, 2013, 1). Another vessel exists in the Sadeh Hall of Glassware and Ceramic Museum in Tehran, a Mandaean bowl named 109-S. This wheel-thrown pottery is chickpea-colored, with a wide mouth, convex body, and no base. This pottery was discovered in Shushtar and is estimated to be from 626-628 AD (Fekripur et al., 2015, 85).

13. The term “Borj-e Ayar” refers to a type of ornament (brass hands and ankle bracelets) made of gold and jewels that women wear on their heads. It is said that a virtuous woman sold her Borj-e Ayar and, in an honorable manner, began to construct this dam. Afterward, virtuous other people zealously helped until it was completed and was named after that woman and ultimately after that ornament (Shushteri, 1984, 63; Hosseini Marashi Shushteri, 1973, 174).

14. Following the conquest of the Roman cities in the regions of Jazira and Sham (Syria), Shapur I, transferred a group of inhabitants from those areas into Iran and settled them in newly established cities such as Gundeshapur and Shushtar in Khuzestan, as well as Riv Ardeshir and Shapur in Fars (Tabari, 1996, vol. 2, 590; Dinvari, 1987, 73; Moghadasi, 1982, vol. 1, 511).

15. Islamic Arabic sources repeatedly refer to the existence and prosperity of textile and weaving centers in Khuzestan’s cities, with origins dating back to the Sassanid era. Masoudi directly points to the role of Roman prisoners in expanding and developing textile industries: “After that, Shapur came to the Jazira region and attacked other Roman territories, bringing many people from there and settling them in Shush, Shushtar, and other cities of Ahvaz province, where they multiplied and established residence. From that time, Shushtar began producing Shushtar silk, various types of silk, Shush fur, and in the Nisibis region, curtains and carpets, a practice that continues to this day.” (Masoudi, 1990, vol. 1, 254). Pegoluskaya also attributes the expansion of workshop industries in Khuzestan to the 3rd and 4th centuries CE (Pegoluskaya, 1998, 324). It appears that most of these workshops were owned by the Shah and government officials, as workers were considered slaves and servants of the Shah. However, urban craftsmen’s workshops emerged simultaneously (ibid., 355). Due to commercial and production competition with Chinese, Syrian, and Phoenician workshops, the Sassanids, showed great enthusiasm for establishing royal workshops in Shush, Gundeshapur, and Shushtar (Daryae, 2008, 107).

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